# REMARKS

## Summary of the Office Action

In the Office Action dated May 18, 2004, claims 1-4 and 8-13 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,410,414 B1 to Lee (hereinafter "Lee") in view of U.S. Patent No. 6,441,467 to Toyosawa (hereinafter "Toyosawa").

## Summary of the Interview of August 18, 2004

On August 18, 2004, Applicants' representative met with the Examiner to discuss the rejections under 35 U.S.C. § 103(a) set forth above. Applicants thank the Examiner for the courtesies extended to Applicants' representative. During the interview, Applicants' representative discussed proposed amendments to independent claims 1 and 8 to recite: "a planarized polyimide formed on said metal interconnect layer." Applicants' representative argued that each of the independent claims 1 and 8, as proposed to be amended, is allowable over Toyosawa and Lee. In particular, Applicants' representative explained to the examiner that the bump connection technology of Toyosawa is not analogous to the interconnect layer disclosed in independent claims 1 and 8. Applicants' representative also argued that neither Lee, nor Toyosawa teaches or suggests a planarized dielectric covering a gold metal interconnect layer.

The Examiner did not elaborate on the patentability of independent claims 1 and 8, as proposed to be amended. The Examiner indicated that the amendment and supporting arguments would be fully considered when filed in response to the outstanding office action.

**Summary of the Response to the Office Action**

Applicants cancel claims 2 and 4 without prejudice or disclaimer. Applicants amend claims 1, 3 and 8 as provided herein. Accordingly, claims 1, 3, and 5-13 remain pending with claims 1, 3, and 8-13 under consideration.

**The Rejections under 35 U.S.C. § 103(a)**

Claims 1-4 and 8-13 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Lee in view of Toyosawa. Applicants cancel claims 2 and 4 without prejudice or disclaimer. Applicants amend claims 1, 3 and 8 as provided herein.

Applicants respectfully submit that, in the instant invention as recited in independent claims 1 and 8, an upper metal interconnect layer is formed with gold. In contrast, Toyosawa merely discloses forming gold-bumps to protect electrode pads. Applicants respectfully submit that bump technology is defined as follows:

> Bump connection technology: "A structure of metal bumps formed on the bonding pads, allowing connection of the chip to a package when the chip is flipped over." Van Zant, Microchip Fabrication, McGraw Hill, 1997

Thus, Applicants respectfully submit that the bump of Toyosawa is not analogous to the interconnect layer of the instant invention because of their technical differences and distinct functionalities with regard to their applications in semiconductor devices.

Applicants further submit that, in the instant invention as recited in independent claims 1 and 8, as amended, a planarized polyimide is formed on the gold metal interconnect layer. Applicants respectfully submit that Lee does not teach or suggest covering a gold metal interconnect layer with a planarized polyimide. As set forth above, Toyosawa lacks the gold metal interconnect layer. Toyosawa could not possibly teach or suggest forming a planarized

polyimide on the gold interconnect layer. Applicants respectfully submit that Toyosawa fails to cure the deficiency of Lee with regard to forming a planarized polyimide on the gold interconnect layer as recited in independent claims 1 and 8.

Applicants further submit that, in the instant invention as recited in independent claims 1 and 8, planarization is performed using a dielectric material. In contrast, the planarizarion of Toyosawa is performed by SOG. Accordingly, the planarization of Toyosawa does not produce the planarization problems which are solved in the instant invention. Thus, Applicants submit that Toyosawa lacks the motivation to provide the gold interconnect layer to address the particular problems associated with the dielectric planarization of the instant invention. Thus, Applicants respectfully submit that Toyosawa fails to cure the deficiencies of Lee with regard to the lack of a gold metal interconnect layer as recited in independent claims 1 and 8.

Applicants further submit that, in accordance with embodiments of the present invention as recited in independent claims 1 and 8, the passivation layer can be made thinner due to the low resistivity and high passivation of the gold interconnect layer. Accordingly, the manufacturing time for forming the passivation layer is reduced. Moreover, the dimension of the semiconductor can be also reduced.

Applicants further assert that by using a gold interconnect layer, it is possible to perform direct wiring bonding on the interconnect layer because of its low resistivity. Thereby, a higher manufacturing yield is achieved because short-circuiting seldom occurs.

In view of the foregoing, Applicants respectfully submit that neither Lee nor Toyosawa whether taken singly or in combination teach or suggest each feature of independent claims 1 and 8, as amended. Thus, Applicants respectfully submit that independent claims 1 and 8, as amended, are allowable over Lee in view of Toyosawa. Applicants further submit that

dependent claims 3 and 9-13 should be allowed at least because of their respective dependence upon allowable claims 1 and 8, and for the additional features that they recite. The cancellation of claims 2 and 4 renders moot the rejection of these claims. Accordingly Applicants respectfully request that the rejections of claims 1-4 and 8-13 under 35 U.S.C. § 103(a) be withdrawn.

## CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and reexamination of this application, withdrawal of all rejections and objections, and the timely allowance of all pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

**EXCEPT** for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0310. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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Dated: October 18, 2004

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